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## COMMON DISEASES OF DOMESTIC RABBITS<sup>1</sup>

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The table on the following pages presents in a concise form useful information on the more common disorders of the domestic rabbit. In certain cases more extensive consideration of a particular subject is available in other pamphlets. Numbers in the column "Disease and synonyms" and corresponding footnotes give these references.

There are certain principles, some of which may appear to be self-evident, that are so generally applicable that space would not permit their repetitious presentation in the table. These together with certain relevant comments are, therefore, enumerated here.

1. Disease is in a sense a natural phenomenon which can never be completely eliminated.
2. Purposeful and intelligent practice may usually keep it at a low level.
3. Prevention is vastly to be preferred to treatment and possible cure.
4. High natural resistance, long life and high productivity are as certainly inheritable as other traits such as size, color, ear length etc. but not necessarily in as simple a pattern. Persistent selection of breeding stock on the basis of superior performance will pay well for the trouble expended.
5. Observe good practices of nutrition to permit the greatest expression of superior inheritable traits.
6. Do not overcrowd your animals.
7. Provide plenty of draft-free ventilation. Up-drafts through self-cleaning floors result from overenclosure of the sides; and these drafts are particularly objectionable.
8. Permit your animals plenty of access to sunlight, if not attended by great heat. Shade must be provided also so instinct may direct the animal's choice.
9. Keep all equipment CLEAN and DRY, and to minimize the possibilities of injury, keep it in good repair.
10. Avoid unnecessary handling of animals, their feed, containers for food and water, or any equipment with which they come in contact. The clothing and hands of the attendant may spread disease.
11. Isolate animals suspected of having infectious diseases, and care for such animals AFTER the normal ones have had their attention.
12. Isolate all stock being brought into your herd, whether it be a new introduction or one of your own animals that has been in possible contact with other rabbits, directly or through equipment and handlers.
13. Protect your animals from disturbing influences, particularly night prowlers. Allow your animals as complete rest during the day as routine care will permit.
14. If rabbits are sold on regular schedule to a dealer, have marketable stock segregated and confined outside of the rabbitry or at its entrance. The pickup man visits many rabbitries in rapid succession, and will appreciate your cooperation in minimizing the possibility of his becoming a factor in the spread of disease.

<sup>1</sup>This supersedes Conservation Bulletin 31, Diseases of Domestic Rabbits formerly issued by the Fish and Wildlife Service, U. S. Department of the Interior.



| Part of body affected | Disease and synonyms                | Cause   | General Symptoms  | Treatment  | Prevention   | Remarks   |
|-----------------------|-------------------------------------|---|---|--|--|---|
| SKIN                  | Ear mange (Ear mites or Ear canker) | Mites (one of two similar forms)<br>Very contagious         | Shaking of head and flapping of ears. Scratching at ears with hind feet. Yellow-white scales in opening at base of ear, with scaly crusts protruding up inner surface of ear in advanced cases.   | Swab thoroughly with one of the following lotions:<br>1. Mixture of 1 part iodoform, 10 parts of ether, 25 parts of olive oil or other vegetable oil.<br>2. 5 percent carbon tetrachloride in vegetable oil or glycerine.<br>Repeat in 6-10 days.  | Clean up and disinfect hutches used by and near infected animals. Treat all animals adjacent to or in contact with infected animals. Do not introduce into herd any infected stock nor equipment from questionable sources.  | Wry neck may be a complication.<br>See below under "Miscellaneous."   |
|                       | Skin mange                          | Mites   | Reddened, scaly skin, hair tending to fall, and evidence of intense itching by persistent scratching or biting. Yellow crusts of dried blood serum may be present.  | Wash affected region with soap and warm water, clip hair back to healthy skin and apply mixture of 1 part flowers of sulphur and 3 of lard. Repeat after 4-6 days, as required.  | Same as above.   | Positive identification may require laboratory test. Compare symptoms with "Favus" below.   |
|                       | Favus (Ringworm)                    | A fungus or mold-like organism<br>Very contagious           | Patches of scaly skin with numerous red, pinhead elevations surrounding hair follicles. Hair breaks off or is shed from older patches. Usually starts on head, but may appear around hind feet. Advanced cases may involve any part of body. Early cases do not itch enough to provoke much scratching, but later ones may do so.   | Clip or shear one-half inch outside affected area. Bathe in warm soapy water and dry. Apply tincture of iodine.  | 1. Disposal of all affected animals by burning or deep burial. 2. Disinfection of all exposed hutches and equipment. 3. Use of gloves and clothing that can be boiled or disposed of after handling affected animals and their equipment. 4. Care to avoid infection of hands or face especially through cuts or scratches. 5. Do not introduce animals or equipment from unknown sources.             | Positive identification depends on microscopic examination of skin or scraping and finding of fungus. Not all animals nor all humans are equally susceptible. Some cases in each can be very serious.                                       |
| Sore hocks            | Sore hocks                          | Bruised or chafed areas that may or may not become infected | Tendency to tread with hind feet, even when sitting. Resting in positions favoring the soles of hind feet. Ball of hind feet shows elevated, tender area, losing pad of fur, or developing scaly crust over naked area. May bleed. Bad cases may be spongy with pus, or open and draining. In advanced cases animal shifts much of weight to front feet, and they break down, as hind ones did. | Front as well as hind feet involved - dispose of animal. Otherwise - 1. Determine and remove contributing factors (see "Prevention"). 2. Place animal on ground or turf, but where it is undisturbed, or 3. Grease pads with an ointment, preferably with a lanolin base. Repeat daily. If infected, sulfathiazole ointment or Calomel-Ianolin (see "Urine burn") is good. | 1. Keep hutches clean and dry, and in good repair. 2. Use a type of flooring, especially for healthy animals, that gives as much support as possible without compromising on cleanliness and dry condition. 3. Protect animals from disturbing influences that incite stamping. Dispose of persistent stampers that excite herd, or at least isolate them in remote corner of rabbitry seldom visited. | Sore hocks undermine health and predispose to other diseases. Nervous does excite their young, and more nervous stock is the result if young are saved from such litters. Raise quiet animals, give them protection, and keep floors clean. |
|                       |                                     | Several sorts of germs may be present                       |   | 4. Penicillin "shots" clear up some cases.   |  |   |



| Part of body affected  | Disease and synonyms  | Cause   | General Symptoms  | Treatment   | Prevention  | Remarks   |
|--|---|---|---|---|---|---|
| MOIST AND MUCOUS MEMBRANES   | Urine burn (Hutch burn, sore vent, "Vent Disease")  | Any one of several skin bacteria infecting chapped membranes. Early cases sometimes not infected  | Inflammation of delicate membranes near sex organs and sometimes anal opening also. Yellow or brownish crusts may cover areas, and swelling, cracking, bleeding or discharge of pus may be present. In males the penis and sheath may swell or show chapping and cracking. Glandular pockets to either side of vent may be involved, but presence of moderate amounts of a thick, whitish secretion in these is normal.                 | Mild cases recover without treatment if faulty conditions are corrected (see "Prevention"). 4 or 5 daily applications of lanolin rubbed well into affected area will hasten recovery. In more severe cases, or if infection is certain, treat daily for 4 - 5 days with mixture of 1 part calomel and 3 parts lanolin. After that, lanolin may be used alone for several days if needed.  | Keep hutch floors clean and dry. Avoid the "soiled corner" to which animal may go to urinate, for urine splashes back, soiling coat and membranes about vent, finally chapping them and admitting germs into skin. Solid floors must be kept very clean and dry and bedding must be changed frequently, if necessary. Avoid solid rails about hutches at levels permitting urine to splash back on animals. | Often confused with Spirochetosis or true Vent disease. The breeder need not distinguish between them for treatment is similar. |
| Infected eyes - several forms: Watery eyes, Weeping eyes, Running (pus) eyes | Irritation, usually followed by or accompanied with infection with any of several common bacteria | Rubbing of eye or face with front feet. Discharge from eye, which, if considerable, may flow across face, wetting and matting fur, and later causing fur to fall out. Discharge may be thin and clear, or thick and yellow or white. If eye bulges, infection is deep-seated, often in orbit or socket. | Very early cases may clear up if sources of irritation are removed (see "Prevention"). Treat early with ophthalmic (eye) solution of sulfathiazole and/or sulfadiazine. 3 - 4 times daily, or similar drugs in ointment, twice daily. Argrol, silver oxide ointment, yellow oxide of mercury ointment or other ophthalmic preparations may have to be tried. No one drug affects all types of germs and old infections are often mixed. | 1. Protect animals from excessive dust, chemicals in paints and sprays, smoke, industrial fumes and other irritants. 2. Keep equipment in repair so injuries are not frequent. 3. Feed wholesome rations with ample roughage in form of leguminous hay and fresh greens, to keep resistance to infection high. 4. Keep equipment clean and otherwise discourage flies by removal of refuse, and use of repellants or insecticides, if required. 5. Admit plenty of sunlight. 6. Protect healthy animals from infected ones. | Severe cases deep seated in the sockets should not be treated, unless skillful use of sulfa drug, or penicillin, internally, is justified. Chronic cases often show sinus involvement, and treatment as for other deep-seated infections is only alternative to natural recovery. Doe or one animal in litter often a source of infection to others. Expression then dependent on location.                 |   |
| Infected nose or lips ("Scabby Nose")  | Any one of several germs Usually same as "Urine burn"   | Inflammation and swelling, or chapping and cracking of nose or lips, with yellow or brown scales forming sometimes to a great thickness.  | No local medication can be kept on. If case justifies use of penicillin intramuscularly (10,000) units at 4-hour intervals, it is usually successful.   | Clean up cases of Urine burn, and prevent reappearance of that disorder. Except for injuries that get infected, most cases are contracted from infected vents.  | Rabbits normally pluck one type of droppings from the anus, and consume them. In doing so, the nose and lips are exposed to infection from sore vents.  |   |



| Part of body affected  | Disease and synonyms                       | Cause  | General Symptoms   | Treatment   | Prevention   | Remarks  |
|------------------------|--|--|--|---|--|--|
| MAMMARY OR MILK GLANDS | Caked breast (Caked udder)                 | Milk not drawn from glands as fast as formed<br><br>Too few young or young not being nursed sufficiently | Early cases, one or more breasts, firm, pink and feverish to touch. Congested. Later cases, quite firm or even hard with knots or bunches at sides of one or more nipples. Very late cases may turn dark, skin becoming naked, dry and stiff, or cracking open, so partly dried milk, of cottage cheese consistency escapes. Nipples may be bruised.               | Prevention is most important, so correct faulty management. Reduce concentrates sharply, and provide generously of hay and greens. Allow plenty of exercise. Rub lanolin well into nipples in early cases, massage to start milk flow, and encourage young to nurse. Recovery in advanced cases may be hastened by softening crusts with lanolin and allowing drainage. Lancing is hazardous. | Do not wean young from heavily milking doe abruptly. If litter is lost, rebreed doe at once. Breeding heavy milkers a few days before litter is weaned may help dry them up. Correct faulty equipment (nest boxes, etc.) that may bruise or injure nipples so doe refuses to let young nurse. Protect doe from disturbing influences. This is very necessary for proper nursing. | Caked breasts, sore hocks, neglected young, kindlings on floor, paralyzed hind quarters and trampled young often point to disturbances at night.                   |
|                        | Mastitis (Breast infection, "Blue breast") | Bacteria, usually staphylococcus or streptococcus<br><br>Very contagious, in some cases                  | In mature does, few exceptions. Feverish, temperature goes above normal (102.7+0.5) to 105 or more. Appetite poor, activity poor. Ears feel hot. Animal may crave water. Early cases, breasts pink and feverish. Nipples may be red or dark. Spreads rapidly from breast to breast. Turn red or purple. Milk usually will flow but may not in more advanced cases. | If early, while temperature still up but not over 106, usually Penicillin, 20,000 units first 1 or 2 injections, 10,000 later, intramuscularly at 4-hour intervals. Reduce concentrates, feed greens. Protect from changes of temperature. If advanced, destroy and burn or bury deeply.  | Allow no questionable animals to enter herd. Accept no used nest boxes from questionable sources. Destroy by burning all bedding, nest boxes, and low cost material used by infected animals. NEVER transfer young from an infected doe to any other. Isolate suspicious animals and destroy untreated sick.   | Occasionally infections from bacteria of common occurrence may follow injury to nipples. Faulty equipment or caked breasts may cause scratched or bruised nipples. |



| Part of body affected | Disease and synonyms   | Cause  | General Symptoms   | Treatment  | Prevention  | Remarks   |
|-----------------------|--|--|--|--|---|---|
| RESPIRATORY SYSTEM    | Colds and snuffles (Some reserve latter term for term for infections with Pasteur-ella and/or Brucella of certain species) | Any of several types of bacteria and possibly viruses, too   | Sneezing, rubbing nose vigorously with front feet. Persistent, not to be confused with temporary irritation from inhalation of dust from feed trough or manger. Nasal discharge may be thin and clear, or heavy and mucus-like. Mats fur on inner side of front feet. Cases may become chronic, clear up, or break into blood stream or go to lungs, and high temperature and death may result.  | Reduce concentrates, and feed plenty of fresh greens. Sunlight and exercise are beneficial in early cases. Penicillin injections help some cases, depending on germs present. "Nose drops" often spread infection to bronchi and lungs, and if used at all must be given sparingly. Since germ is not specific, treatment cannot be either.  | Keep resistance of animals high by selection of stock from resistant proven parents. Feed for maximum development of inherited resistance by using roughage (good hay and fresh greens) generously. Provide plenty of draft-free ventilation, sunlight (if not great heat) and plenty of opportunity for exercise.<br><br>Avoid crowding.   | In general, colds in rabbits resemble colds and sore throats in humans in that more than one germ may be present. The infections are prevalent, strike when resistance is low, and medicines are often useless. |
|                       | Pneumonia Particulary prevalent in very young (nest box age) and young does carrying or nursing 1st or 2nd litters         | Any of several types of bacteria Usually appears as complication to other disease, a hazard of pregnancy and lactation or a result of exposure<br><br>Not usually highly contagious but some types are | Labored breathing, often with nose held high. Temperature rises, ears feel hot. Feed may or may not be consumed. Craving for water sometimes noted. Activity restricted. Late cases show bluish coloration of eyes and ears (cyanosis). Temperature falls some hours before death. There may be diarrhea in last few hours, seldom otherwise unless other disorders are present too. Lungs show congestion, and may be white as with pus (usually prolonged cases) or bluish purple, red, fiery pink or mottled. | Must be detected early, before too much damage is done. Lighten load (if nursing doe) but watch for caked breasts. Keep at uniform temperature. Reduce concentrates and provide greens. Penicillin, intramuscularly, in hind legs, (see "Mastitis Treatment" above) is specific for several of the germs known to cause pneumonia. Some types cannot be cured. Late cases are fatal. | As above, in general, and<br>1. Give does special protection and attention 10-14 days before and after kindling.<br>2. Don't save breeding stock from unproven lines, or from animals having to be nursed through pregnancy and lactation periods.<br>3. Keep nest box material clean and dry, to avoid exposure of infants.<br>4. Eliminate ear mange, sore hocks, animals with long incisors, abscessed navels, abscessed molar teeth and other predisposing factors. | Pneumonia is usually a secondary disease, caused by organisms that are ever-present but strike the animal weakened by any factor. Seek and eliminate such factors.  |



| Part of body affected                        | Disease and synonyms                                  | Cause   | General Symptoms  | Treatment   | Prevention   | Remarks   |
|--|---|---|---|---|--|---|
| DIGESTIVE SYSTEM                             | Long 2 teeth (Buck teeth, Wolf teeth or malocclusion) | Some types inheritable, others from injury or diseases  | Incisors not worn away as fast as they grow, so mouth does not close properly. Upper incisors curl back, lower protrude.  | None, except advanced fryers may be kept to marketable size by trimming teeth with side cutting pliers.   | Save no breeding stock from parents showing long teeth unless source of long teeth is known to be accidental.  | Most cases show by 8 weeks, but some appear much later. In adults many cases accompany disorders of molars and face.  |
|  | Infected molars                                       | Some unknown; others, injuries from foreign bodies in food  | Animal chews abnormally, favoring affected side. May drink with head to one side. Drooling is common. Later, swellings on jaw may appear.   | None.   | None, except to avoid use of equipment that allows fine wire to get in mouth, and avoid feed with excessive beards and burrs.  | Because of cautious chewing, long teeth often follow. Pneumonia usually sets in.  |
|  | Liver coccidiosis                                     | A specific one-celled animal parasite   | Usually no symptoms except appearance of white, circular spots on and through liver. Heavy cases, poor appetite, loss of flesh, and enlargement of liver to extent it can be felt in living animal. One autopsy, liver much enlarged, and permeated with nodules. Egg-like oocysts in droppings revealed by microscopic examination.  | None. Mild cases are self-healing, but scars remain in liver for many weeks. Extremely severe cases are fatal. Livers from affected animals should not be marketed, although man can not contract the disease.  | Use equipment for feed and water that cannot become contaminated with droppings. Keep hutch floors clean and dry. Remove manure frequently. Do not handle animals or equipment unnecessarily. Do not contaminate food, fur, or utensils with any material you may carry on your hands or clothing.   | Drug control, although possible, is not only costly and unnecessary but will not work unless practices sufficient in themselves are instituted.   |
| Mucoid enteritis (Scours, Diarrhea or Bloat) | Intestinal coccidiosis                                | One or more of four common one-celled animal parasites multiplying in the lining of the intestine of domestic rabbits | Mild cases - no symptoms except on microscopic examination of droppings, intestinal content, or wall. Moderate cases - tendency to soft droppings or diarrhea. Failure to gain, hunched position with hind feet far forward. Little interest in food. Eyes alert when animal aroused. Severe cases - profuse diarrhea rapid loss of flesh, hunched position. Mucus may be voided. "Pot belly" on recovery. Pneumonia often sets in. | Usually none. If reinfection does not occur, the disease runs its course in from 4 or 5 days (after first appearance of symptoms) to 10 - 14 days. Reinfection is possible, and frequent. Resistance is developed so no symptoms may be shown, but the animal may still contract the disease and void the egg-like oocysts in the droppings. The four types are distinct. | As above, but even greater precautions are required to avoid contamination of feed, water, utensils, hutch floors, or the fur of the animals. Handling, as during sexing and selection of breeding stock provides great opportunity for spread. Drug control is possible within limits, but not economically practical or usually necessary. | Whereas liver coccidiosis can be virtually eliminated by good management, intestinal coccidiosis can only be kept at low levels; but these can be entirely compatible with profitable production. |
|  | Mucoid enteritis (Scours, Diarrhea or Bloat)          | Unknown   | Loss of appetite, hunched posture, little activity, ears prone, eyes squinted and dull, even on provocation. Coat rough, hair erect, abdomen often bloated. Frequent sipping of water. Temperature usually normal or subnormal. Often diarrhea or mucus. May grind teeth. Dead show much water in stomach. Intestines show hemorrhage, are empty, or with fluid or mucus.   | No specific recommendations. Observe principles of sanitation to reduce hazards of complications.   | No specific recommendations. Observe principles of sanitation to reduce hazards of complications.  | Few cases are noted in next box babies, and the greatest incidence (by mortality records) is near the close of the sixth week.  |
|  | Tapeworm larva (Bladder-worms)                        | Larval stage of dog tapeworm  | White streaks in liver. Clear, bubble-like cysts of pin head to small pea size on membranes, intestines or other organs. External symptoms not specific, or absent in light cases.  | None. If infection of this sort exists in herd, make sure no dogs have access to viscera of any of your animals.  | Keep dogs away from feed, water, bedding and utensils. Eggs of tapeworm in dog droppings or on fur must not reach rabbits. Do not let dogs consume rabbit viscera or they may develop mature worms.  | Developing and mature stock may be affected   |



| Part of body affected | Disease and synonyms                            | Cause   | General Symptoms  | Treatment   | Prevention  | Remarks  |
|-----------------------|---|---|---|---|---|--|
| MISCELLANEOUS         | Uterine Infection (Metritis or White discharge) | Any of several bacteria. Most not highly contagious               | White, sticky discharge under hutch. Not to be confused with thick urine, which is not sticky. Found in one or both uteri. Often detectable by palpation.                                       | None is practical. Market the animal to avoid contamination of buck.  | Breed only clean animals. Dispose of infected animals, and disinfect contaminated equipment. Keep flies down.   | Some few cases result from decomposition of retained afterbirth. Occasionally these recover. |
|                       | Myxomatosis (Big head, Mosquito disease)        | A filterable virus. Often transmitted by mosquitos. Usually fatal | Inflammation, and grotesque, bulbous swellings about eyes, nose, ears, and genitals. Ears may swell enough to droop from weight. Discharge from eyes, loss of appetite, heavy breathing, death. | None. Destroy affected animals by burning or deep burial.   | Keep down mosquitos by draining, oil spray on marshes, and usual precautions. Screen or use insecticide to keep adult mosquitos down.   | Limited to West Coast Mexico, and South America, as known from reports.                      |
|                       | Milkweed poisoning (Head down disease)          | Consuming woolly-pod milkweed in feed or bedding                  | Paralysis of neck muscles and loss of coordination. Head droops between front legs. Animal can eat and drink if head is supported. In advanced cases paralysis may be general.                  | Moderate cases - support head of animal and get it to drink and to eat greens and carrots. Get as much fluid down as possible. Advanced cases are hopeless. | Search hay and especially bedding for light, greenish-yellow stems and leaves of woolly-pod milkweed. Use only if free of this weed.  | Woolly-pod milkweed ( <i>Asclepias eriocarpa</i> ) reported only from Pacific Southwest.     |
|                       | Paralyzed hind-quarters                         | Broken back, injury to spinal cord                                | Hindquarters drag, lie to one side or at least cannot support weight. Break may often be felt in small of back. Bladder fills but does not empty readily.                                       | None. Very few could recover. There is internal hemorrhage in most cases and permanent damage to nerve cord.  | Provide animals protection from disturbing influences, particularly night prowlers and visitors that startle animals badly.   |  |
|                       | Wry neck (Twisted neck, or Limber-neck)         | Infection of organs of balance of inner ear                       | Head twisted to one side, often followed by animals rolling over, after which the process may be repeated.  | None. After organs of balance are destroyed or badly damaged, complete recovery does not follow.  | Eliminate ear mange from herd. It is most common initial factor. Cases following injury are usually in nest box babies, and attributable to pure accident or disturbing influences. | May follow ear mange, accidental perforation of ear drum, or throat infection.               |

